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Abstract: This paper uses a unique personnel data set and state administrative data to follow welfare and nonwelfare hires who separate from similar jobs with the same firm. Welfare hires are more likely to separate from their job and are more likely to be on welfare after separation compared with similarly low-skilled nonwelfare hires. Those not returning to welfare, however, are no more or less likely to have moved on to a lower- or higher-paying job than nonwelfare hires.

JEL classification: H53, J31, J62

Key words: welfare, welfare-to-work, separation behavior, multinomial logit, switching regression, administrative data

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I. Introduction and Background

There is a voluminous literature documenting transitions of welfare recipients to the labor market and the success of those transitions. Welfare-to-work transitions are often found to be plagued by low pay, high turnover rates, and welfare recidivism (for example, see Lane and Stevens 1995, Hozer et al. 2004, Hoynes 2000, and Acs and Loprest 2004). Much of this literature is limited in that the analysis includes only welfare recipients as the focus of analysis.[1] The absence of similarly skilled nonwelfare recipients in an analysis of labor market outcomes introduces the potential of confounding the behavior of welfare recipients with that of the behavior of low-skilled workers in general.

The purpose of the analysis in this paper is to quantify the labor market experience of former welfare recipients and to compare that experience to other, similarly low-skilled workers. Identifying similarities and differences in labor market outcomes between welfare and nonwelfare hires will allow us to identify what part of that experience is unique to former welfare recipients and what part is common among all low-skilled workers. If similar outcomes are identified, then policies aimed at improving labor market outcomes among welfare hires might be more effectively targeted at all low-skilled workers.

[1] Exceptions can be found in Loeb and Corcoran (2001) who find that wage growth is similar among welfare and nonwelfare recipients and Gunderson and Hotchkiss (2004) who find very similar job separation rates and reasons among welfare and nonwelfare recipients.

This paper follows low-skilled workers (some of whom were welfare recipients) who separated from a single firm in the late 1990s. Personnel data from the firm will provide demographic and job information for each worker. The personnel records are linked to administrative data from the Georgia Department of Labor and the Georgia Department of Human Resources in order to assess the postseparation outcome for each worker.[2] The first analysis explores how the earnings among workers who separate compare with those who stay employed with the original employer (controlling for the decision to separate), whether the earnings experience differs across welfare status, and how important future earnings expectations are in the separation decision. Efforts to keep welfare hires from separating from their employer may not be called for if they fare better than, or at least as well as, nonwelfare hires when they separate. This analysis is followed by a closer look at the life after an employee separates to determine the likely outcome among four alternatives: return to welfare, no job, better job, or worse job. This analysis explores the issue of welfare recidivism in greater detail and helps to shed light on the earnings outcomes of the first analysis.

II. Data

The data used in this study are from the personnel records of a large, unionized firm in the transportation industry with numerous domestic and international locations. Since the administrative data to which these workers will be linked are only available for the state of Georgia, the study is restricted to workers employed at firm locations in

[2] Although the firm employs workers across the U.S. and internationally, due to data availability limitations only workers employed in Georgia are able to be followed in this study.

Georgia.[3] Due to the numerous different job types this firm employs, the focus will be on one particular type: part-time package sorters. This part-time position typically involves working four to five hours a day, five days a week. By focusing on one job type, this study provides for homogeneity in working conditions.[4] This homogeneity in job type is important since we don't have information on previous work experience. Presumably, individuals qualifying for this entry-level job have similar (very limited) work experience. This type of work often involves heavy lifting, repetitiveness, and working conditions with extreme temperatures depending on the weather. Since this job requires a relatively low level of skill, this is a typical job that a welfare recipient would be able to obtain (for example, see Loprest 2001, Wolman 1996, and Zill et al. 1991).

The data set was constructed by querying the firm's personnel records for all employees (of this job type) hired from January 1, 1998, to December 31, 1999. These employees were then matched with other personnel tables to obtain data on demographic characteristics such as education and age, and job-related characteristics such as shift worked. To be classified as a welfare hire, the individual must meet the welfare criteria applicable to the Work Opportunity Tax Credit (WOTC). Qualified AFDC recipients were any individuals who were members of a family receiving AFDC (or a successor

[3] One advantage to an analysis limited to one geographic location and covering a relatively short period of time is that the results are not confounded by variation in labor market conditions.

[4] Johnson and Corcoran (2003) and Heinrich et al. (2005) explore the impact of differences across job characteristics on subsequent labor market outcomes among welfare recipients and former recipients only.

program) for any nine months during the last 18 months, ending on the hiring date. An outside agency hired by the firm identified which employees were welfare hires.[5]

Individual employee records are linked to individual-level and employer-level data collected by the Georgia Department of Labor (DOL) and welfare receipt data collected by the Georgia Department of Human Resources (DHR).[6] Even though the sample is limited to workers employed by this firm in the state of Georgia, the firm has multiple establishments in the state, thus all individuals do not work at the same job location. There are 6,421 nonwelfare hires and 271 welfare hires (these numbers include both workers who separated and workers who did not separate from the firm). Sample statistics are contained in Table 1.

[Table 1 here]

The means in Table 1 indicate that welfare hires are younger (by three years), more likely to be single, black, and female, compared to nonwelfare hires. The average education level of welfare hires is similar to nonwelfare hires, 12.7 years versus 13 years, respectively. Looking at the tenure of those who separated from the firm, welfare hires and nonwelfare hires separate at approximately the same time—after 48 days for welfare hires and after 47 days for nonwelfare hires, however welfare hires are slightly more

[5] There is no way to tell whether a worker identified as a "nonwelfare hire" has ever been on welfare. That individual was merely not identified as *recently* receiving welfare benefits. It is also not clear whether individuals self-identified themselves as a welfare recipient or as a member of a welfare-receiving family. Any potential contamination of the nonwelfare hire sample with individuals who were on welfare but didn't self-identify is likely adequately diluted by the large numbers of truly nonwelfare hires. In addition, since this firm had an active welfare hiring program, the usual concerns about the impact of employment subsidy programs on employer behavior (e.g., see Tennenwold 1982) are not likely relevant.

[6] There was a 100% match between the sub-group from the main data set and the DOL and DHR data sets.

likely to separate (73 percent) than nonwelfare hires (70 percent). In addition, the reasons for separating are similar across welfare status.[7] Among workers who did not separate, welfare hires have, on average, higher tenure, 271 days versus 203 days for nonwelfare hires.

Welfare hires are less likely to work the night shift, perhaps reflecting the higher proportion of women among welfare hires. The hourly rate of pay is similar, reflecting the highly structured pay scale, although hourly pay is skewed more to the right among nonwelfare hires. Welfare hires are slightly less likely to be students and handicapped veterans.

Both of the analyses described below require that we construct, for each person who separates from the original employer and is subsequently employed, an earnings variable for the worker's primary job after separating. The worker's primary job is identified as the first job for this person that appears in the DOL wage files for three consecutive quarters after separation. The wage reported in the interior (i.e., middle) quarter is selected as the primary job's earnings. This strategy used to identify a person's postseparation earnings will be referred to as the "interior job method." If an individual does not have a job appearing for three consecutive quarters, the first instance of a job appearing for two consecutive quarters is selected and the highest wage is used.[8] For individuals with postseparation earnings, but not having the same job for two or more consecutive quarters, the highest postseparation quarterly earnings is used.

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[7] Reasons for separating in this study include personal reasons (e.g., childcare or transportation difficulties), professional reasons (e.g., getting a better job or pay dissatisfaction), or being fired for cause. Laid-off workers are not included since the focus is on the impact of individual behavior rather than exogenous demand shocks.

[8] If an individual had more than one job with two or three consecutive quarters appearing at the same time, the highest wage job was selected.

Table 2 reports the average postseparation wages by welfare status using alternative ways to define an individual's primary postseparation job. On the lower end, workers' average postseparation quarterly wage is $1,741 for welfare hires and $2,424 for nonwelfare hires. On the upper end, workers' maximum postseparation quarterly wage is $3,291 for welfare hires and $4,251 for nonwelfare hires. Using the methodology discussed above (the interior job method), the average postseparation quarterly wage is $2,346 for welfare hires and $3,097 for nonwelfare hires. If individuals not having a job for two or more consecutive quarters are excluded (strict interior job method), the average quarterly wage rises for both groups ($2,532 for welfare hires and $3,353 for nonwelfare hires). Although the model will be estimated using these various measures of postseparation wages, the interior job method is preferred, with the assumption that a job lasting two or three consecutive quarters is more representative of an individual's earning capacity than the average or maximum wage received.

[Table 2 here]

III. Empirical Methodology

A. The Separation Decision and its Impact on Wages

The first analysis is designed to determine what influences a worker's decision to separate from the original employer, to explore what impact that decision has on earnings, and how welfare hires fare relative to their nonwelfare counterparts. The empirical methodology employed is a switching regression model with selection.

The mechanism determining a worker's wage is allowed to differ by a worker's separation status.:

$$\ln W_i^S = \tau_0^S + \tau_1^S X_i^S + \tau_2^S Welfare_i^S + \upsilon_i^S \quad (1)$$

and

$$\ln W_i^{NS} = \tau_0^{NS} + \tau_1^{NS} X_i^{NS} + \tau_2^{NS} Welfare_i^{NS} + \upsilon_i^{NS} \quad (2)$$

where *S* corresponds to those who separated from the original employer, *NS* refers to those who did not separate, τ represents the coefficients to be estimated, X_i represents the personal characteristics of age, age squared, previous experience, greater than high school education, veteran-handicapped status, female, white, and married. $Welfare_i$ is a dummy variable which equals one if the individual is a welfare hire in the original job, and zero otherwise, and υ_i represents the random error term.

The dependent variable for those who separate is based on the interior postseparation quarterly earnings (described in the previous section). For those who do not separate, the dependent variable is the worker's last quarter of earnings in their job with the original employer.

A naive strategy would be to estimate the coefficients (τ's) of equations (1) and (2) separately, with the coefficients from equation (1) being estimated by ordinary least squares (OLS) on individuals who have separated and the coefficients of equation (2) also being estimated by OLS, but this time on individuals who did not separate. The relative wage premium paid to those who separate could then be obtained given the coefficient estimates of equations (1) and (2):

$$\ln \hat{W}_i^S - \ln \hat{W}_i^{NS} = (\hat{\tau}_0^S - \hat{\tau}_0^{NS}) + (\hat{\tau}_1^S - \hat{\tau}_1^{NS}) X_i + (\hat{\tau}_2^S - \hat{\tau}_2^{NS}) Welfare_i \quad (3)$$

However, this estimation procedure may produce biased results since the error terms in equations (1) and (2) are not necessarily uncorrelated with the other explanatory

variables. Sample selection results if individuals do not randomly select to separate or not. The goal is to obtain parameter estimates from each equation that will allow us to make earnings predictions for those not included in the estimation sample. Following Lee (1978), a probit model is estimated to compute the inverse of the Mills ratios that are then included as additional regressors in the wage equations in order to control for the possibility of non-random individual selection into the separate and not-separate samples.

The unobserved structural probit model is:

$$I_i^* = \beta_0 + \beta_1 (\ln W_i^S - \ln W_i^{NS}) + \beta_2 Y_i + \beta_3 Welfare_i + \eta_i \quad (4)$$

And, the observed model is:

$$I_i = \begin{cases} 1 \text{ if } I_i^* > 0 \\ 0 \text{ otherwise} \end{cases} \quad (5)$$

Thus, when I_i equals one, a separation is observed, and otherwise no separation is observed ($I_i = 0$). The vector Y_i consists of the set of variables outlined for equations (1) and (2) (except age squared) and the additional dummy variables reflecting whether the individual worked the day or night shift. The shift-of-work dummy variables are believed to affect the probability of a worker separating, but to not directly affect one's postseparation wage. The parameters to be estimated are represented by the β s, and η_i represents a normally distributed random error term whose variance is assumed to equal one.

Separation from the original employer is modeled as an individual choice since roughly 90 percent of those who separate quit for professional or personal reasons and one could argue that being fired for cause is a matter of individual (bad) behavior choice, rather than involuntary action. Layoffs are not included in the analysis.

In order to obtain the inverse of the Mills Ratios, the reduced-form probit model is derived by substituting equations (1) and (2) for $(\ln W_i^S - \ln W_i^{NS})$ in the structural probit model, equation (4). Thus, the probability of observing a separation is a function of all of the explanatory variables in the model. Using MLE, coefficient estimates are obtained and used to compute the inverse of the Mills ratio (selectivity correction factor), λ, for each individual *i*:[9]

$$\hat{\lambda}_i^S = [-f(\hat{\beta}_i)/F(\hat{\beta}_i)] \tag{6}$$

$$\hat{\lambda}_i^{NS} = [f(\hat{\beta}_i)/1-F(\hat{\beta}_i)] \tag{7}$$

where $F(.)$ is the cumulative normal distribution of a standard normal random variable, $f(.)$ is the density function of a standard normal random variable, and the $\hat{\beta}s$ are the coefficients from estimating the reduced-form probit.

The inverse of the Mills ratio is then added to the corresponding wage equations to control for an individual's probability of separating (or not separating) from the original employer:

$$\ln W_i^S = \alpha_0^S + \alpha_1^S X_i^S + \alpha_2^S Welfare_i^S + \alpha_3 \hat{\lambda}_i^S + \nu_i^S \tag{1'}$$

and

$$\ln W_i^{NS} = \alpha_0^{NS} + \alpha_1^{NS} X_i^{NS} + \alpha_2^{NS} Welfare_i^{NS} + \alpha_3 \hat{\lambda}_i^{NS} + \nu_i^{NS} \tag{2'}$$

A comparison of the coefficients on the explanatory variables across equations (1') and (2') will determine whether there is a differential impact of welfare status (and other

[9] The coefficient on $\hat{\lambda}_i^S$ ($\hat{\lambda}_i^{NS}$) is the estimated covariance of the error term in the probit equation and the error term in the wage equation for separators (non-separators), divided by the standard deviation of the probit equation's error term. If this coefficient is significant, it indicates there is significant self-selection by those who separated (those who did not separate).

characteristics) on postseparation wages, and how well those who separate from the original employer fare compared to similar workers who do not separate.

B. Postseparation Outcomes

To focus more closely on the life after an employee separates, workers who separated from the original employer are followed for a minimum of two quarters beyond the quarter they separated to examine whether they: (1) returned to welfare (welfare), (2) did not report wages (no job), (3) obtained a lower-paying job (job losers), or (4) obtained a higher-paying job (job winners). These mutually exclusive outcomes, which will also be referred to as outcomes one, two, three, and four, respectively, are determined by comparing the quarterly earnings received during the last quarter of employment in the original job with the quarterly earnings reported postseparation by the Georgia Department of Labor.[10] If an individual receives welfare benefits in any quarter after separating, her outcome is welfare. Individuals reporting no wages for the entire postseparation period, and who do not receive welfare benefits have the outcome "no job."[11] Since an individual may have several jobs (i.e., several employers) postseparation, a primary job is determined for each individual not in the "welfare" or "no job" category. A worker's postseparation primary job is determined by the "interior job method," as described in the Data section.

Outcome classifications by welfare status are presented in Table 3. 150 people (3% of those who separated) have the outcome "welfare," 532 individuals (11%) have the

[10] Since the original job wage information is reported hourly, the quarterly wage was computed as: [(hourly pay rate * 20 hours) * 52 weeks] / 4.
[11] Having no wages reported could also mean the individual moved out of Georgia or is working at a non-covered (in regards to unemployment insurance) job.

outcome "no job," 1,988 individuals (42%) have the outcome "job winner," and 2,015 (43%) individuals have the outcome "job loser." There are 2,007 individuals (30% of the sample) who did not separate. As one may expect, a larger percentage of welfare hires had the outcome "job loser" (48% versus 43% for nonwelfare hires), as well as the outcome welfare (16% versus 3% for nonwelfare hires). A larger percentage of nonwelfare hires had the outcome "no job" (12% compared to 6%), perhaps because these individuals pursued educational activities, no longer needed to work due to financial circumstances, or because they moved out of state.

[Table 3 here]

To model the choice of work status for welfare and nonwelfare hires, a multinomial logit model is estimated, based on the four possible outcomes. The individual is assumed to choose the outcome providing her the highest level of utility. Let *y* be the dependent variable with *j* outcomes, numbered but not assumed to be ordered, and define the probability that individual *i* chooses outcome one (where *U* refers to utility):

$$P_1 = P(y_1 = 1) = P(U_{i1} > U_{ij}) \text{ for } j=2, 3, 4. \tag{8}$$

Thus, the probability of choosing outcome one is the probability that the utility from outcome one exceeds the utility from outcomes two, three, and four. Let the average utility associated with choosing outcome *j* be given as:

$$U_{ij} = X_i \beta_j + \varepsilon_{ij} \tag{9}$$

where ε_{ij} is a random error term. For outcome j, define:

$$P(y_i = j) = \frac{\exp(X_i \beta_j)}{\sum_{j=1}^{4} \exp(X_i \beta_j)} \tag{10}$$

where X_i is the vector of independent variables which includes dummy variables for race, greater than high school education, gender, shift worked at original job, excellent or good performance rating while employed at original job, previous employment with the original firm, marital status, reason for separating original job, and welfare status; and continuous variables for wage rate at original job, age, age squared; and β_j is the vector of parameters to be estimated.

Thus,

$$\sum_{j=1}^{4} P(y = j) = 1. \tag{11}$$

Although the probabilities sum to one, the model is not identified since there is not a unique set of parameters which gives rise to the probabilities observed. To identify the model, the parameters associated with outcome four ("job winner") are set equal to zero ($\beta_4 = 0$). With this constraint, equation (10) is replaced by:

$$P(y_i = j) = \frac{\exp(X_i \beta_j)}{1 + \sum_{j=1}^{3} \exp(X_i \beta_j)} \qquad \text{for } j \leq 3 \tag{12}$$

and

$$P(y_i = 4) = \frac{1}{1 + \sum_{j=1}^{3} \exp(X_i \beta_j)} \qquad \text{for } j = 4 \tag{13}$$

Following Greene (2000), the log likelihood function is:

$$\ln L(\beta) = \sum_{i=1}^{N} \sum_{j=1}^{4} d_{ij} \ln P_{ij} \tag{14}$$

where $d_{ij} = 1$ if alternative *j* is chosen by individual *i* and 0 if not, for the *j* possible outcomes. Thus, the estimated coefficients will tell us the percentage change in the odds

of pursuing a particular work status alternative, relative to being a "job winner," for a one-unit change in an independent variable.[12]

IV. Empirical Results

A. To-Separate or Not-to-Separate: Implications for Earnings

The first order of business is to determine what influences a worker's decision to separate from the original employer, to explore what impact that decision has on earnings, and how welfare hires fare relative to their nonwelfare counterparts. Efforts to keep welfare hires from separating from their employer may not be called for if they fare better, or at least as well as nonwelfare hires, as a result of separating.

Results from the first-stage, reduced-form probit model that describes a worker's tendency to separate or not, are found in Table 4.[13] At the 90% significance level, welfare hires have an increased probability of separating.[14] As expected, workers with a greater than high school education also have an increased probability of separating. Low-skilled workers with more education likely separate from their job in order to pursue more promising employment opportunities than are available to workers with less education (see Gunderson and Hotchkiss 2004). Working during the night shift also results in a higher probability of separating the original job. Being a student or having

[12] Marginal effects of a unit change in the value of each regressor on the change in the probability of a given postseparation outcome will actually be what is discussed below. See Greene (2000), pp. 860-1.

[13] 545 observations (8.1 percent of the total number of observations) were dropped due to having postseparation earnings of zero. Of the 545, 14 were welfare hires.

[14] Many others have documented high turnover rates among welfare recipients (for example, see Berg et al 1992, Holzer et al. 2004, and Johnson and Corcoran 2003). While Gunderson and Hotchkiss (2004) also find a higher rate of turnover among welfare recipients, they find that the time to separation is slightly longer for welfare hires, relative to non welfare hires.

worked for the firm before contributes to a significantly lower probability of separating, the latter being indicative of this firm being a good job match for certain individuals. Also, students may find this type of job a particularly good fit with their academic schedule.

[Table 4 here]

Table 5 presents the estimated coefficients from the wage equations (1') and (2'). The results suggest that being a welfare hire negatively impacts postseparation wages, while welfare status does not significantly affect the wages of those who did not separate.[15] The implication is that the earnings outcome among those who separate is significantly (21 percent) lower for welfare hires than for nonwelfare hires. In spite of the lower earnings outcome among welfare hires that separated, others have found that future earnings among these workers are likely to be higher than those of welfare recipients that have not had an employment experience (for example, see Heinrich et al. 2005 and Grogger 2005). The outcomes analysis to follow will shed light on the reason for this lower postseparation earnings outcome of welfare hires.

[Table 5 here]

The selection term, $\hat{\lambda}$, is negative and significantly different from zero in the wage equation for those who separate. This indication of negative self-selection suggests that an individual who chooses to separate ends up with a lower wage than the average person would upon separation. The insignificance of the selection term in the non-separating wage equations suggests that those who choose to stay with the original

[15] The estimated coefficients for the non-separation wage equation should be interpreted with caution due to the relatively low R^2. Very low systematic variation across regressors is not unexpected as those still employed by the original employer continue to have their wages determined by a union-negotiated formula.

employer do not fare better or worse than the average worker who stays. This is not surprising given the strong institutional nature of the wage determination through union contracts with the original employer.

The differences in wage determining mechanisms across the two equations can largely be explained by the union influence of wage determination in the original employer. Being older (a rough proxy for overall labor market experience) has a significant effect on the wage rate of those who separate, but not on the wage rate of non-separators. This result is as expected since overall labor market experience has value in general, but may not be correlated with seniority, which appears to be more important in the determination of wage with the original employer. Evidence of this is found in the positive and significant coefficient on the Previous Experience (with the firm) regressor; among those who remain employed with the original firm, those with previous experience with the firm earn 1.6 percent higher wage than those who do not.

A greater than high school education increases the wage rate for all workers whether they separate from the firm or not, with the impact being much stronger for those who separate. Again likely reflecting the union influence of wage determination, being white does not have a significant effect on wages of those who remain employed with the original firm, but significantly positively affects wages of those who separate. It's unclear why married workers would earn a higher wage among those who separate, but earn a lower wage among those who do not.

Estimation of the structural probit model, equation (4), allows us to investigate the effect of the wage premium a worker might expect from separating from her job on that decision to separate. If the expected earnings differential positively affects the decision

to separate, the coefficient on the term $(\ln\hat{W}_i^S - \ln\hat{W}_i^{NS})$ will be positive and significantly different from zero.[16] Estimates from the structural probit model are presented in Table 6.

[Table 6 here]

The sign on the expected wage difference between separating and not separating is positive, although insignificantly different from zero. The signs, significance, and magnitude of the variables in the structural probit are similar to those in the reduced-form probit. The insignificance of the expected wage difference indicates that expected wages are not a driving force in the decision to separate from the original employer. This is not entirely unexpected since, as will be seen in the next section, the predicted probabilities of a worker that separates ending up with a higher or lower paying job are about the same.

B. Postseparation Outcomes

The analysis of postseparation outcomes will provide some insight as to why expected earnings don't seem to influence the separation decision and why, among those who separate, welfare hires end up with lower earnings than nonwelfare hires. Table 7 contains the marginal effects calculated at the mean for the multinomial logit estimated to describe the outcome probabilities of those who separate.[17] These results are

[16] The expected wage from separating and from not separating is calculated for all observations, regardless of their separation decision. Having controlled for potential selection into each of these states allows us to use the consistent parameter estimates to make predictions out-of-sample.

[17] The estimated coefficients are in Appendix tables A1 through A3. The model was estimated using outcomes based on the interior wage job, "strict" interior wage job, average wage job, and maximum wage job. The marginal effects reported are based on

generalizable to those who separate from the original employer only and are designed to answer the question, "Are welfare hires more likely to end up in a particular postseparation outcome than nonwelfare hires with the same characteristics?"

[Table 7 here]

Having a greater than high school education, being white, or married decreases the probability that welfare is the outcome after separation. Individuals who are welfare hires, female, or who were fired for cause have an increased probability of having their outcome be welfare. Being a welfare hire increases the probability of a welfare outcome by 4.1 percentage points, while being female increases the probability by 8.0 percentage points. This significant tendency to return to welfare among welfare hires is consistent with results reported by Hoynes (2000) who finds that the "demand for welfare" persists even through improved labor market conditions. However, Gottschalk (2005) reports that exposure to work reduces a recipients demand for welfare through an alteration of their beliefs about treatment in the workplace. This suggests that welfare recidivism in this sample is likely lower than among recipients who experience a spell off of welfare that did not involve an employment experience.[18] Nam (2005) also finds lower rates of recidivism among welfare recipients with labor market experience.

The probability of having a "no job" outcome is higher for students, which would be expected, and is lower for welfare hires and individuals who quit for professional reasons or for being fired for cause. Most likely, welfare hires are at a reduced

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the interior wage job. Overall, the estimated coefficients do not differ considerably by how the postseparation wage was specified.

[18] Furthermore, Carrington et al. (2002) find that welfare recidivism is lower in the post-welfare reform years than before TANF replaced AFDC.

probability of a "no job" outcome because if they truly do not have a job, they have most likely returned to welfare.

The signs on the marginal effects for the "job winner" and "job loser" outcomes are as expected. A higher wage rate (earned with the original employer), being older, having greater than a high school education, or separating for professional reasons increases the probability of having the outcome be "job winner." Females, students, and individuals who have previous work experience with the original firm are less likely to have a "job winner" outcome, as are individuals who worked the day shift. Focusing on the "job loser" outcome, students, day shift workers, and individuals fired for cause are more likely to have this outcome. A higher wage rate, being older or quitting for professional reasons decreases the probability of a "job loser" outcome.

These results are consistent with Johnson and Corcoran (2003) who find, among welfare recipients/former recipients only, that greater labor market experience and a higher original wage rate improve the chances of transitioning into a better job, whereas job performance problems lead to a worse job outcome. Also consistent with Johnson and Corcoran, education beyond high school increases the probability of a "job winner" outcome and it is also found here to reduce welfare recidivism--an outcome not evaluated by Johnson and Corcoran.

The results suggest a number of policy implications. Being fired for cause significantly increases the probability of having a welfare or "job loser" outcome. Since one of the main reasons individuals are fired for cause is due to excessive absenteeism (68% of workers fired for cause was because of absenteeism), efforts to improve work-readiness skills may reduce the chances of being fired for cause, and thus increase the

chances of having a better outcome in the event of a separation. Enhancement of work-readiness skills also appears to have a more positive effect than the actual quality of work performed, as represented by the lack of significance of the performance rating dummy variable.

The results also indicate that having an education greater than high school reduces the probability of the outcome being welfare. Thus, promoting education beyond high school would be beneficial and would appear to help reduce the probability of a welfare outcome.[19] While perhaps more difficult to design policy for, promotion of marriage would also aide in reducing the probability of having a welfare outcome. However, one cannot be certain that it is marriage per se that reduces the probability of a welfare outcome; it could be unobserved characteristics of married individuals which contributes to the reduced probability. While some virtually unchangeable characteristics, such as race and gender, have significant effects on the outcomes estimated, there are some characteristics which can be targeted, such as education and work-readiness skills, in order to increase the probability of a more desirable outcome.

It is also of interest to note that welfare hires were no more or less likely to experience a "job winner" or "job loser" outcome than nonwelfare hires, although 78 percent of welfare hires and 83 percent of nonwelfare hires find themselves in one of these two outcomes. The implication is that when it comes to low-skilled workers moving from one job to another, welfare history is not a hindrance (or help) in making a

[19] Nam (2005) finds that promotion of education even at lower levels (e.g., high school completion) would reduce welfare recidivism, as well.

positive transition.[20] This means that efforts to improve the job transition outcomes among welfare hires might very well be best addressed to assist all low-skilled workers; there is nothing special about welfare recipients that will make their transition either more or less difficult than similarly skilled workers without a welfare history.

Since 91% of individuals with the welfare outcome reported at least one quarter with positive postseparation wages, the model was re-estimated with three outcomes only: "no job," "job winner," and "job loser."[21] The marginal effects are presented in Appendix A, Table A4 and resemble the marginal effects calculated from estimating four outcomes.[22] Most notably, there is still no significant impact of having a history of welfare receipt on ending up with a "job winner" or "job loser" outcome.

V. Summary and Conclusions

The analyses in this paper indicate that while the job separation experience of welfare hires is similar in many ways to that of their nonwelfare counterparts, there are also some important differences. The study makes use of unique personnel data from one firm and administrative data from the state of Georgia to follow workers who separate from their employer to determine how these experiences differ across welfare status.

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[20] This result is consistent with Loeb and Corcoran (2001) who find that workers of similar labor market histories experience similar wage growth, regardless of their welfare receipt experiences.

[21] A Small-Hsiao test of the IIA assumption was rejected for the welfare outcome, indicating that when the probability of the welfare option changes, the relative choices of the other outcomes changes. See Small and Hsiao (1985).

[22] Two exceptions are the female dummy variable coefficient, which is now significantly positive in the "job loser" outcome, and the white dummy variable coefficient, which is now significantly negative in the "job loser" outcome.

Welfare hires are found to be more likely to separate from their job and they can expect lower postseparation earnings, on average, than their nonwelfare counterparts. This suggests that job-stability efforts concentrated on welfare recipients has merit. Furthermore, promoting education beyond high school would improve the postseparation earnings outcome among both welfare and nonwelfare hires. Evidence that separation decisions of both types of workers are being driven by factors other than expected higher earnings on a subsequent job is also presented.

An analysis of job separation outcomes confirms that those who separate are, for all practical purposes, equally likely to find themselves in higher or lower paying jobs than the one they left, regardless of whether they were a welfare or nonwelfare hire on the original job. However, those identified as welfare hires with the original employer are significantly more likely than nonwelfare hires to end up on welfare after separation. This suggests that "welfare" presents itself as a more viable postseparation outcome for those with previous experience of receiving welfare.

Having been "fired for cause" (regardless of welfare status) also increases the probability (by 1.8 percentage points) that a worker who separates ends up on welfare and increases the probability even more (by 7.6 percentage points) that the worker ends up in a lower paying job from which they were fired. Therefore, improving job-readiness skills (i.e., reducing the odd of being fired for cause) and promotion of education beyond high school would improve the job separation outcomes of all workers. However, it appears that extra effort concentrated on welfare hires is warranted, given that they are significantly more likely to end up on welfare after separation than their nonwelfare counterparts.

Table 1: Means of Selected Variables

Variable	Nonwelfare Hires	Welfare Hires
Age	26 (7.9) [16, 57]	23 (5.5) [16, 46]
Education (years)	13.0 (1.3) [12, 18]	12.7 (1.0) [12, 16]
Hourly pay rate with original employer	$8.52 (0.20) [8.00, 16.19]	$8.51 (0.09) [8.50, 9.50]
Day shift = 1	0.23	0.41
Night shift = 1	0.40	0.20
Twilight or Sunrise shift = 1	0.37	0.39
Previous experience with original employer = 1	0.02	0.003
Excellent or good performance rating = 1	0.09	0.10
Tenure at original job (days)	95 (119) [1, 729]	106 (133) [1, 725]
Workers who separated	48 (51) [1, 473]	47 (49) [1, 371]
Workers who did not separate	203 (156) [4, 729]	271 (155) [17, 725]
Separate = 1	0.70	0.73
For professional reasons	0.30	0.27
For personal reasons	0.62	0.63
For being fired for cause	0.08	0.10
Female =1	0.17	0.34
White =1	0.13	0.03
Black =1	0.82	0.97
Single =1	0.80	0.92
Vet-handicapped =1	0.11	0.07
Student = 1	0.20	0.18
Maximum welfare benefit (pre-separation)[a]	$699 (353) [26, 1848]	$796 (274) [140, 1485]
Maximum welfare benefit (postseparation)[b]	$643 (376) [33, 1980]	$729 (343) [85, 1874]
Number of Observations	6,421	271

Standard deviation is in parenthesis. Minimums and maximums are in brackets.

[a] Excludes zeros. The percent of welfare and nonwelfare hires receiving benefits was 13 and 2 percent, respectively.

[b] Excludes zeros. The percent of welfare and nonwelfare hires receiving benefits was 12 and 2 percent, respectively.

Table 2: Postseparation Quarterly Earnings

Variable	Nonwelfare Hires	Welfare Hires
Average Pre-separation Quarterly Wage	$2,211 (28) [2080, 3292]	$2,211 (10) [2210, 2340]
Postseparation Interior Job Wage	$3,097 (3185) [0, 64603]	$2,346 (2160) [0, 10736]
Postseparation Strict Interior Job Wage[a]	$ 3,353 (3290) [0, 64603]	$2,532 (2225) [0, 10736]
Average Postseparation Wage	$2,424 (2451) [0, 34548]	$1,741 (1662) [0, 9444]
Maximum Postseparation Wage	$4,251 (5087) [0, 187940]	$3,291 (3042) [0, 26550]
Number of Observations (separators)	4,486	199

[a]NOBS = 3,852 for nonwelfare hires and 173 for welfare hires.
Standard deviation is in parenthesis. Minimums and maximums are in brackets.

Table 3: Outcomes by Welfare Status

Outcome	Entire Sample	Nonwelfare Hires	Welfare Hires
Did not separate	2,007	1,935	72
Welfare	150 (3%)	118 (3%)	32 (16%)
No Job	532 (11%)	521 (12%)	11 (6%)
"Job Winner"	1,988 (42%)	1,928 (43%)	60 (30%)
"Job Loser"	2,015 (43%)	1,919 (43%)	96 (48%)
Number of Observations	6,692	6,421	271

Percent of those who separated is in parenthesis.

Table 4: Coefficients from Reduced-Form Probit; Explaining the probability of separating.

Variable	Coefficient
Age	-0.001 (0.016)
Age squared	-0.000 (0.000)
Previous Experience	-0.576 (0.128)***
Greater than High School	0.149 (0.036)***
Student	-0.686 (0.046)***
Vet-handicapped	0.083 (0.058)
Female	-0.062 (0.045)
White	-0.051 (0.051)
Welfare	0.161 (0.088)*
Married	0.012 (0.050)
Night	0.361 (0.041)***
Day	0.077 (0.044)*
Constant	0.562 (0.228)***
Log likelihood	-3681.302
Pseudo R^2	0.0519
NOBS	6,147

Standard errors are in parenthesis. *** indicates significant at the 99% level; ** indicates significant at the 95% level; * indicates significant at the 90% level

Table 5: Coefficients from Wage Equations Adjusted for Selectivity

Variable	Separators	Non-Separators
Age	0.189 (0.018)***	0.001 (0.001)
Age squared	-0.002 (0.000)***	-0.000 (0.000)
Previous Experience	-0.039 (0.189)	0.016 (0.005)***
Greater than High School	0.081 (0.045)*	0.004 (0.002)***
Student	-0.021 (0.107)	-0.010 (0.004)***
Vet-handicapped	0.055 (0.061)	0.002 (0.003)
Female	-0.065 (0.050)	-0.001 (0.002)
White	0.172 (0.057)***	-0.001 (0.002)
Welfare	-0.206 (0.092)***	0.001 (0.004)
Married	0.103 (0.054)**	-0.004 (0.002)***
$\hat{\lambda}$	-0.618 (0.235)***	-0.009 (0.007)
Constant	4.696 (0.288)***	7.709 (0.012)***
R^2	0.1501	0.0241
Number of Observations	4,140	2,007

Standard errors are in parenthesis and have been adjusted using Heckman's (1979) consistent estimator. *** indicates significant at the 99% level; ** indicates significant at the 95% level; * indicates significant at the 90% level

Table 6: Coefficients from Structural Probit

Variable	Coefficient
Age	-0.018 (0.006)***
Previous Experience	-0.571 (0.128)***
Greater than High School	0.142 (0.038)***
Student	-0.685 (0.046)***
Vet-handicapped	0.078 (0.059)
Female	-0.056 (0.045)
White	-0.067 (0.054)
Welfare	0.180 (0.092)*
Married	0.002 (0.053)
Night	0.361 (0.041)***
Day	0.077 (0.044)*
$\ln \hat{W}_Q - \ln \hat{W}_{NQ}$	0.092 (0.110)
Constant	0.839 (0.134)***
Log likelihood	-3681.302
Pseudo R^2	0.0519
NOBS	6,147

Standard errors are in parenthesis. *** indicates significant at the 99% level; ** indicates significant at the 95% level; * indicates significant at the 90% level

Table 7: Marginal Effects from Multinomial Logit

Variable	Welfare	No Job	Job Loser	Job Winner
Quarterly wage rate with original employer	0.021 (0.012)*	0.110 (0.061)*	-0.613 (0.271)**	0.481 (0.220)**
Age	-0.003 (0.002)	0.003 (0.005)	-0.067 (0.007)***	0.067 (0.008)***
Age squared	0.000 (0.000)	-0.000 (0.000)	0.001 (0.000)***	-0.001 (0.000)***
Previous Experience	-0.003 (0.013)	0.035 (0.047)	0.100 (0.070)	-0.132 (0.069)*
Greater than High School	-0.011 (0.003)***	-0.015 (0.010)	-0.012 (0.016)	0.038 (0.017)**
Student	-0.003 (0.004)	0.083 (0.018)***	0.090 (0.023)***	-0.170 (0.024)***
Vet-Handicapped	-0.005 (0.005)	-0.006 (0.016)	-0.006 (0.026)	0.016 (0.026)
Female	0.080 (0.012)***	-0.007 (0.013)	-0.001 (0.020)	-0.073 (0.021)***
White	-0.010 (0.004)***	0.026 (0.015)*	-0.035 (0.022)	0.019 (0.024)
Welfare	0.041 (0.013)***	-0.059 (0.018)***	-0.007 (0.036)	0.024 (0.040)
Night	-0.004 (0.003)	-0.005 (0.011)	-0.022 (0.018)	0.031 (0.019)
Day	-0.000 (0.003)	0.012 (0.013)	0.056 (0.020)***	-0.068 (0.021)***
Excellent or Good performance rating	0.002 (0.005)	-0.020 (0.015)	0.022 (0.024)	-0.005 (0.024)
Separated for professional reason	0.002 (0.003)	-0.056 (0.010)***	-0.062 (0.016)***	0.116 (0.017)***
Separated for being fired for cause	0.017 (0.008)**	-0.052 (0.014)***	0.073 (0.029)**	-0.038 (0.030)
Married	-0.013 (0.004)***	-0.004 (0.015)	-0.001 (0.023)	0.018 (0.023)
Pr(Outcome|X)	1.58%	11.51%	35.02%	51.90%
Percent of Sample (NOBS)	3.20% (150)	11.36% (532)	42.43% (1,988)	43.01% (2,015)

NOBS = 4,685. Standard errors are in parenthesis. Outcomes based on using interior wage job. *** indicates significant at the 99% level; ** indicates significant at the 95% level; * indicates significant at the 90% level.
Log Likelihood = -4537.412; psuedo R^2=0.0946.

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Appendix A: Multinomial Logit Parameter Estimates.

Table A1: Coefficients from Multinomial Logit: Outcome = Welfare

Variable	Interior Wage Job	"Strict" Interior Wage Job	Average Wage Job	Maximum Wage Job
Wage rate	0.433 (0.610)	0.422 (0.611)	0.420 (0.594)	0.589 (0.578)
Age	-0.290 (0.104)***	-0.317 (0.105)***	-0.397 (0.103)***	-0.244 (0.103)**
Age squared	0.004 (0.002)**	0.004 (0.002)**	0.005 (0.002)***	0.003 (0.002)*
Prev. Exp	0.052 (1.055)	0.476 (1.093)	-0.213 (1.058)	0.086 (1.050)
Greater than High School	-0.764 (0.197)***	-0.761 (0.199)***	-0.817 (0.199)***	-0.791 (0.195)***
Student	0.141 (0.292)	0.292 (0.299)	0.128 (0.297)	0.144 (0.288)
Vet-Handicapped	-0.365 (0.443)	-0.374 (0.445)	-0.347 (0.445)	-0.357 (0.443)
Female	2.296 (0.199)***	2.293 (0.203)***	2.364 (0.204)***	2.255 (0.197)***
White	-0.857 (0.403)**	-0.836 (0.405)**	-1.027 (0.405)**	-0.786 (0.402)*
Welfare	1.282 (0.257)***	1.262 (0.260)***	1.393 (0.274)***	1.402 (0.251)***
Night	-0.340 (0.232)	-0.271 (0.235)	-0.331 (0.234)	-0.323 (0.230)
Day	0.119 (0.223)	0.196 (0.226)	0.325 (0.227)	0.039 (0.220)
Goodwork	0.158 (0.289)	0.149 (0.291)	0.137 (0.292)	0.082 (0.288)
Prof. Reason	-0.104 (0.206)	-0.142 (0.207)	-0.134 (0.208)	-0.013 (0.204)
Fired for Cause	0.848 (0.268)***	0.758 (0.272)***	1.030 (0.277)***	0.807 (0.263)***
Married	-1.143 (0.440)***	-1.149 (0.440)***	-1.183 (0.441)***	-1.141 (0.440)***
Constant	-1.988 (5.342)	-1.453 (5.362)	0.149 (5.205)	-4.346 (5.073)
Log Likelihood	-4537.412	-3912.898	-4458.697	-4101.486
Pseudo R^2	0.0946	0.0963	0.1212	0.1040
NOBS Welfare Outcome	150	150	150	150

NOBS=4,685. Standard errors are in parenthesis. *** indicates significant at the 99% level; ** indicates significant at the 95% level; * indicates significant at the 90% level. Coefficients are estimated relative to the "Job Winner" category.

Table A2: Coefficients from Multinomial Logit: Outcome = No Job

Variable	Interior Wage Job	"Strict" Interior Wage Job	Average Wage Job	Maximum Wage Job
Wage rate	0.028 (0.388)	0.052 (0.378)	0.003 (0.384)	0.175 (0.375)
Age	-0.106 (0.051)**	-0.116 (0.052)**	-0.197 (0.052)***	-0.060 (0.050)
Age squared	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)***	0.000 (0.001)
Prev. Exp	0.559 (0.408)	0.870 (0.444)**	0.306 (0.412)	0.593 (0.395)
Greater than High School	-0.205 (0.105)**	-0.205 (0.106)*	-0.253 (0.107)**	-0.231 (0.102)**
Student	0.959 (0.140)***	1.112 (0.145)***	0.943 (0.149)***	0.948 (0.133)***
Vet-Handicapped	-0.080 (0.170)	-0.072 (0.171)	-0.066 (0.172)	-0.068 (0.168)
Female	0.088 (0.138)	0.090 (0.140)	0.142 (0.142)	0.052 (0.135)
White	0.169 (0.139)	0.160 (0.142)	0.004 (0.143)	0.239 (0.136)*
Welfare	-0.740 (0.331)**	-0.731 (0.333)**	-0.625 (0.344)*	-0.622 (0.326)*
Night	-0.100 (0.119)	-0.083 (0.121)	-0.091 (0.122)	-0.083 (0.116)
Day	0.240 (0.131)*	0.272 (0.133)**	0.426 (0.137)***	0.162 (0.127)
Goodwork	-0.172 (0.168)	-0.170 (0.169)	-0.190 (0.171)	-0.237 (0.165)
Prof. Reason	-0.751 (0.119)***	-0.773 (0.121)***	-0.772 (0.122)***	-0.665 (0.118)***
Fired for Cause	-0.493 (0.220)**	-0.494 (0.222)**	-0.327 (0.230)	-0.533 (0.215)**
Married	-0.067 (0.149)	-0.083 (0.150)	-0.102 (0.150)	-0.064 (0.147)
Constant	0.452 (3.367)	0.454 (3.289)	2.455 (3.339)	-1.817 (3.251)
Log Likelihood	-4537.412	-3912.898	-4458.697	-4101.486
Pseudo R^2	0.0946	0.0963	0.1212	0.1040
NOBS No Job Outcome	532	532	532	532

NOBS=4,685. Standard errors are in parenthesis. *** indicates significant at the 99% level; ** indicates significant at the 95% level; * indicates significant at the 90% level. Coefficients are estimated relative to the "Job Winner" category.

Table A3: Coefficients from Multinomial Logit: Outcome = Job Loser

Variable	Interior Wage Job	"Strict" Interior Wage Job	Average Wage Job	Maximum Wage Job
Wage rate	-2.677 (1.197)**	-3.311 (1.622)**	-0.984 (0.558)*	-1.421 (1.060)
Age	-0.322 (0.034)***	-0.331 (0.038)***	-0.395 (0.034)***	-0.347 (0.041)***
Age squared	0.004 (0.001)***	0.004 (0.001)***	0.005 (0.001)***	0.004 (0.001)***
Prev. Exp	0.543 (0.313)*	0.309 (0.443)	0.021 (0.320)	0.871 (0.321)***
Greater than High School	-0.107 (0.073)	-0.052 (0.082)	-0.157 (0.073)**	-0.248 (0.083)***
Student	0.612 (0.107)***	0.551 (0.125)***	0.477 (0.117)***	0.817 (0.108)***
Vet-Handicapped	-0.048 (0.118)	0.006 (0.133)	-0.008 (0.113)	-0.039 (0.151)
Female	0.145 (0.096)	0.168 (0.109)	0.222 (0.096)**	0.085 (0.114)
White	-0.142 (0.105)	-0.135 (0.118)	-0.408 (0.106)***	0.015 (0.116)
Welfare	-0.065 (0.173)	-0.010 (0.191)	0.110 (0.186)	0.240 (0.181)
Night	-0.121 (0.083)	-0.137 (0.094)	-0.081 (0.083)	-0.117 (0.096)
Day	0.291 (0.091)***	0.289 (0.102)***	0.541 (0.096)***	0.206 (0.099)**
Goodwork	0.072 (0.106)	0.204 (0.116)*	0.019 (0.106)	-0.150 (0.130)
Prof. Reason	-0.401 (0.078)***	-0.419 (0.088)***	-0.351 (0.077)***	-0.297 (0.091)***
Fired for Cause	0.269 (0.128)**	0.231 (0.143)	0.456 (0.140)***	0.287 (0.136)**
Married	-0.037 (0.105)	-0.043 (0.119)	-0.147 (0.101)	-0.031 (0.135)
Constant	27.723 (10.188)***	32.958 (13.803)**	15.154 (4.769)***	16.654 (9.035)*
Log Likelihood	-4537.412	-3912.898	-4458.697	-4101.486
Pseudo R^2	0.0946	0.0963	0.1212	0.1040
NOBS Job Loser Outcome	2,015	1,450	2,577	1,387

NOBS=4,685. Standard errors are in parenthesis. *** indicates significant at the 99% level; ** indicates significant at the 95% level; * indicates significant at the 90% level. Results using the worker's postseparation average wage are identical to those using the interior job method. Coefficients are estimated relative to the "Job Winner" category.

Table A4: Marginal Effects from Restricted Multinomial Logit: Three Outcomes Only

Variable	No Job	Job Loser	Job Winner
Wage rate	0.066 (0.051)	-0.307 (0.165)*	0.241 (0.134)*
Age	0.002 (0.005)	-0.079 (0.008)***	0.077 (0.008)***
Age squared	-0.000 (0.000)	0.001 (0.000)***	-0.001 (0.000)***
Prev. Exp	0.035 (0.048)	0.108 (0.070)	-0.143 (0.064)**
Greater than High School	-0.017 (0.011)*	-0.001 (0.017)	0.019 (0.017)
Student	0.086 (0.018)***	0.092 (0.024)***	-0.178 (0.023)***
Vet-Handicapped	-0.005 (0.017)	-0.019 (0.027)	0.025 (0.026)
Female	0.003 (0.014)	0.042 (0.022)*	-0.045 (0.021)**
White	0.025 (0.016)	-0.046 (0.023)**	0.021 (0.024)
Welfare	-0.058 (0.020)***	0.033 (0.042)	0.025 (0.044)
Night	-0.005 (0.012)	-0.021 (0.019)	0.027 (0.019)
Day	0.012 (0.013)	0.079 (0.021)***	-0.091 (0.021)***
Goodwork	-0.020 (0.015)	0.009 (0.025)	0.011 (0.025)
Prof. Reason	-0.057 (0.010)***	-0.062 (0.018)***	0.119 (0.018)***
Fired for Cause	-0.053 (0.015)***	0.084 (0.031)***	-0.031 (0.031)
Married	-0.003 (0.015)	-0.035 (0.024)	0.038 (0.023)*
Pr(Y|X)	11.94%	45.14%	42.92%
% of Sample in Job Outcome (NOBS)	11.63% (545)	44.97% (2,107)	43.39% (2,033)

NOBS = 4,685. Standard errors are in parenthesis. Outcomes based on using interior wage job. Percent of classification is in parenthesis. Log Likelihood = -3994.428; psuedo R^2=0.0951. *** indicates significant at the 99% level; ** indicates significant at the 95% level; * indicates significant at the 90% level.